

REMARKS

In the Office Action dated December 15, 2006, claims 1-8, 10, 11, 14-20, 22, and 23 are pending and stand rejected. Claim 1 has been amended. No new matter has been added. Reexamination and reconsideration of the claims as requested is respectfully requested.

On page 2 of the Office Action, claims 1-7, 11, 14, 16-19, and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson, et al. (U.S. Patent No. 6,436,127) in combination with Chernoff (U.S. Patent No. 6,135,994) and Sator, et al. ("Objective assessment of photoageing effects using high-frequency ultrasound in PUVA-treated psoriasis patients," *British Journal of Dermatology*, vol. 147, 2002, pp. 291-298). The Applicant respectfully traverses this rejection, but has amended the application to overcome the objections.

On page 3 of the Office Action, claims 8, 10, 20, and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson, et al. in combination with Chernoff and Sator, et al. as applied to claims 1-7, 11-19, and 23 and further in combination with Mueller, et al. (U.S. Patent No. 6,238,386). The Applicant respectfully traverses this rejection, but has amended the application to overcome the objections.

On page 4 of the Office Action, claim 15 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson, et al. in combination with Chernoff and Sator, et al. as applied to claims 1-7, 11-19, and 23 and further in combination with Bonis, et al. ("308 nm UVB excimer laser for psoriasis," *The Lancet*, vol. 350, November 22, 1997, pp. 1522). The Applicant respectfully traverses this rejection, but has amended the application to overcome the objections.

Claim 1 is amended to further clarify the claim elements. The scope of claim 1 is unchanged by this amendment. No new matter is added. There is support for this amendment in the specification, for example, on page 5, lines 15-16.

Anderson is directed to treating psoriasis with ultraviolet phototherapy. Anderson scans a patient's skin, designates area of affected skin, and selectively delivers high doses of UV radiation to the designated areas. (Abstract) More specifically, Anderson's diagnostics serve only to find affected skin areas, and map out "affected and unaffected areas of skin". (column 6, lines 58-60) If an area is affected, it receives treatment; if it is unaffected, it does not receive treatment. In Anderson, there is no fine-tuning of the radiation doses among the various affected areas; all affected areas receive the same dose.

For instance, in the detailed example, "An Automated Radiation System for Treatment of Psoriasis", Anderson discloses a system having two shutters that control the intensity of the radiation directed onto the patient's skin. Through the shutters, there are only two intensity levels, corresponding to "bright and dim, depending on whether treatment beam is delivering a therapeutic (and potentially harmful) dose of UV radiation or a diagnostic (and safe) dose of UV radiation." (column 11, lines 32-35) There is no fine-tuning of the therapeutic intensity level; it is always set to the same level if the diagnostic says that the skin area is affected by psoriasis.

The Applicant respectfully disagrees with the Examiner's characterization of Anderson in paragraph 2 of page 2 of the Office Action. In one embodiment of Anderson, a large skin area is scanned first, then treatment at the high intensity level is applied to only the affected portions of the scanned skin area. In another embodiment, the shutters alternate the beam intensity between high (therapeutic) and low (diagnostic) so that treatment may be done on the fly. In the portion of Anderson noted by the Examiner (column 15, lines 37-48), the treatment process is performed more quickly because the diagnostic test is being run at the high (therapeutic) intensity; the shutter remains completely open as the beam scans across the skin, and closes when the skin area beneath the beam does not show signs of psoriasis. In other words, this mode of operation assumes that the beam is already on an affected area, and scans along the skin until the diagnostics (which are run from the light reflected from the high-intensity beam) say otherwise.

Once a skin area has been determined to be "affected" by psoriasis, using the diagnostics of Anderson, there is no need for further diagnostics. In particular, for skin areas "affected by psoriasis", as recited by amended claim 1, Anderson does not teach or suggest "determining the thickness of the epidermis in such areas", as also recited by amended claim 1. There is no motivation in Anderson to perform any additional diagnostics, once an area is determined to be "affected". Furthermore, because Anderson uses only a single beam intensity for affected areas, there is no motivation for "varying the UV radiation dose for the treatment of any skin area showing visible redness without blister formation", as recited by amended claim 1.

Furthermore, the criterion for varying the dose in Anderson does not teach or suggest that recited by amended claim 1. In Anderson, "the minimal erythema dose (MED) in normal skin is defined as the lowest fluence eliciting an inflammatory response, and is used to guide dosimetry." (column 2, lines 12-14; column 4, lines 33-35) "Doses can be greater than about two MED, greater than about three MED, about ten MED, or greater than about ten MED." (column 4, lines 15-17) In contrast, amended claim 1 recites, "determining whether any of the skin areas receiving the UV radiation dose show a visible redness without blister formation to occur based on this given UV radiation dose and the thickness of the epidermis detected in this skin area, and varying the UV radiation dose per treatment for the treatment of any skin area showing visible redness without blister formation," which is clearly not taught or suggested by Anderson.

As a result, not all the elements of claim 1 are taught or suggested by Anderson, and claim 1 is not obvious in view of Anderson alone.

Chernoff discloses a surgical method, in which a depth below the skin is measured using ultrasound, the depth is stored and retrieved, then "a laser excitation power that will achieve treatment of the tissue at the retrieved depth is calculated from the retrieved depth

of the tissue to be treated" (column 2, lines 3-5) In other words, Chernoff discloses varying a treatment laser power as a function of tissue depth.

However, Chernoff fails to remedy the deficiencies of Anderson. Chernoff is directed to cosmetic and reconstructive surgery (column 1, lines 13-14), and has nothing to do with psoriasis or treatment of "skin areas affected by psoriasis," as recited by amended claim 1. As such, Chernoff does not supply a motivation for "determining the thickness in such skin areas", as this step would be a redundant diagnostic when combined with the teachings of Anderson.

Chernoff also fails to teach or disclose the criterion for varying the dose of amended claim 1: "determining whether any of the skin areas receiving the UV radiation dose show a visible redness without blister formation to occur based on this given UV radiation dose and the thickness of the epidermis detected in this skin area, and varying the UV radiation dose per treatment for the treatment of any skin area showing visible redness without blister formation."

As a result, not all the elements of claim 1 are taught or suggested by Anderson in view of Chernoff, and claim 1 is not obvious in view of Anderson in view of Chernoff.

Sator discloses a study of photoageing effects, in which ultrasound is used to examine the skin of patients that have received UV treatment for psoriasis: "Ultrasound is a highly precise and suitable method for this purpose." (page 292, paragraph 2, lines 3-4). Note that Sator discloses only the results of UV treatment, and is silent on regulating the treatment itself. Sator cannot supply a motivation for "determining the thickness in such skin areas", as this step would be a part of the treatment, not a part of the results. There is no motivation to combine Sator with either or both of Anderson and Chernoff.

Sator also fails to teach or disclose the criterion for varying the dose of amended claim 1: "determining whether any of the skin areas receiving the UV radiation dose show a visible redness without blister formation to occur based on this given UV radiation dose

and the thickness of the epidermis detected in this skin area, and varying the UV radiation dose per treatment for the treatment of any skin area showing visible redness without blister formation.”

As a result, not all the elements of claim 1 are taught or suggested by Anderson in view of Chernoff and Sator, and claim 1 is not obvious in view of Anderson in view of Chernoff and Sator.

Muller is directed to endoscopy therapy, in which a waveguide transmits both a laser and ultrasonic energy into the body. (column 2, lines 8-12) Muller teaches cutting tissue with either or both the ultrasound and the laser, and is completely silent on applications that don't involve cutting. One of ordinary skill in the art would clearly not use the teachings of Muller for diagnosis and treatment of psoriasis, which involves no cutting whatsoever. In turn, one of ordinary skill in the art would not combine the teachings of Muller, which are all directed to cutting tissue, with any of the above cited references, which are directed to treating psoriasis with UV radiation.

As a result, not all the elements of claim 1 are taught or suggested by Anderson in view of Chernoff, Sator and Muller, and claim 1 is not obvious in view of Anderson in view of Chernoff, Sator and Muller.

Bonis is directed to using a 308 nm UVB excimer laser for treating psoriasis, which is close in wavelength to the typical 311 nm wavelength. Bonis discloses raising the dosage of UV radiation from treatment session-to-treatment session: “The narrow band UVB therapy (Philips TL-01) was given five times weekly, starting at 130 mJ/cm² with a 65 mJ/cm² increase in dose each time.” (paragraph 3, lines 2-5) This dosage is not varied for each particular skin area, from dosage-to-dosage, as recited by claim 1, but is maintained constant over the course of a treatment session, and is varied session-to-session.

Furthermore, the dosage disclosed by Bonis is increased without regard for tissue damage: “Treatments were repeated three times weekly until all treated plaques had

cleared completely." (paragraph 2, lines 10-12) As such, Bonis teaches against "determining whether any of the skin areas receiving the UV radiation dose show a visible redness without blister formation to occur based on this given UV radiation dose and the thickness of the epidermis detected in this skin area, and varying the UV radiation dose per treatment for the treatment of any skin area showing visible redness without blister formation," as recited by amended claim 1.

The teachings of Bonis cannot remedy the deficiencies of Anderson and the other cited references.

As a result, not all the elements of claim 1 are taught or suggested by Anderson in view of Chernoff, Sator, Muller and Bonis, and claim 1 is not obvious in view of Anderson in view of Chernoff, Sator, Muller and Bonis.

Three criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP § 2142. Applicants respectfully traverse the rejection since the prior art fails to disclose all the claim limitations and there would be no motivation to combine the references as proposed by the Examiner. Applicants believe current claim 1 is in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

Dependent claims 2-8, 10, 11, 14-20, 22 and 23, which are dependent from independent claim 1, were also rejected under 35 U.S.C. §103(a) as being unpatentable over the references. While Applicant does not agree with the particular rejections to these dependent claims, it is believed that these rejections are moot in view of the remarks made in connection with independent claim 1. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features

which further distinguish these claims from the cited references. Therefore, dependent claims 2-8, 10, 11, 14-20, 22 and 23 are also in condition for allowance. Reconsideration, allowance, and notice to that effect are respectfully requested.

CONCLUSION

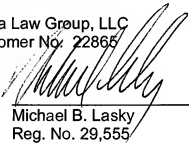
In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. The amendments clarify the patentable invention without adding new subject matter. Applicant respectfully requests favorable reconsideration and early allowance of all pending claims.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Michael B. Lasky at (952) 253-4106.

Respectfully submitted,

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